REMARKS

The office action of October 3, 2005 has been received and carefully reviewed. It is submitted that by this response, all bases, rejection, and objection are traversed. Upon entry of this response, claims 1-4, 6-19 and 21-23 remain in the application. Claims 5 and 20 have been cancelled. Claims 1 and 11 have been amended to better define the invention, and to particularly point out and distinctly claim the subject matter which applicant regards as the invention. By these amendments, no new matter has been added. Support for the amendments is found in the specification and in the canceled claims 5 and 20.

Claims 1 and 11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Berry (U.S. 3,507,116). Applicants respectfully traverse this rejection as it applies to amended claims 1 and 11. The Berry reference teaches a device for the regulation of flow which is made up of an assembly of elements where each element has a first supply channel entering radially into a chamber, a second supply channel entering tangentially into a mixing chamber, and an outlet. However, the outlet is positioned along the outer perimeter of the mixing chamber. Claim 1 has incorporated the limitations of claim 5, and claim 11 has incorporated the limitations of claim 20. Berry does not teach the use of a plurality of supply channels having alternating tangential and radial inlets to the mixing chamber, and where the mixture is drawn from the central portion of the mixing chamber and not from the outer perimeter. Nor does Berry teach the use of a layered structure of substantially planar elements stacked to form a device having channels in one layer, and a mixing chamber in another layer, when stacked to form a unitary system. An exemplary

example of claim 11 can be seen in Figure 4 and in the Detailed Description from paragraphs 60-63. The design produces rapid mixing while providing low pressure drops, whereas the Berry reference is designed for increasing pressure drop to control flow of a fluid. It is therefore submitted that the amended claims 1 and 11 are not taught, anticipated or rendered obvious by the reference.

Claims 1-3, 11 and 15-18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wagner et al. (U.S. 3,794,299). Applicants respectfully traverse this rejection as it applies to amended claims 1 and 11, and claims dependent from claims 1 and 11. The Wagner et al. reference teaches a device having a tangentially directed inlet to a chamber, with a second inlet for spraying a second fluid radially from the center of the chamber to the chamber walls. Claim 1 has incorporated the limitations of claim 5, and claim 11 has incorporated the limitations of claim 20. Wagner et al. does not teach the apparatus having a plurality of both radial and tangential inlets around the perimeter of the mixing chamber, nor does Wagner et al. teach the use of a layered structure comprised of substantially planar elements wherein the elements when stacked form distribution channels and a mixing chamber. It is therefore submitted that the amended claims 1 and 11 are not taught, anticipated or rendered obvious by the reference, and that claims 2-3 and 15-18 depend either directly or indirectly from claims 1 and 11 and through this dependency are not taught, anticipated or rendered obvious.

Claims 1-3, 11 and 15-18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by El-Saie (U.S. 4,498,819). El-Saie teaches a mixing apparatus which has a substantially

conical shaped mixing chamber with a first supply channel and a second supply channel. The reference teaches a first supply channel that is axial and the second supply channel is tangential. The reference also allows for a third supply channel, but the third supply channel should be oriented in the same manner as the first supply channel (Col. 1, ln 58-61, and Figure). El-Saie does not teach a mixing apparatus with supply channels having radial discharges into the mixing chamber, and therefore is missing this element of the present invention. In addition, El-Saie does not teach a layered structure comprising a series of substantially planar layers making up an apparatus as described in amended claim 11. It is therefore submitted that the amended claims 1 and 11 are not taught, anticipated or rendered obvious by the reference, and that claims 2-3 and 15-18 depend either directly or indirectly from claims 1 and 11 and through this dependency are not taught, anticipated or rendered obvious.

Claims 1-3, 11 and 15-18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ririe (U.S. 3,643,406). Ririe teaches an apparatus having a first and second supply channel to a mixing chamber with one radial and one tangential. Claim 1 has incorporated the limitations of claim 5, and claim 11 has incorporated the limitations of claim 20. Ririe does not teach the apparatus having a plurality of both radial and tangential inlets around the perimeter of the mixing chamber, nor does Ririe teach the use of a layered structure comprised of substantially planar elements wherein the elements when stacked form distribution channels and a mixing chamber. It is therefore submitted that the amended claims 1 and 11 are not taught, anticipated or rendered obvious by the

reference, and that claims 2-3 and 15-18 depend either directly or indirectly from claims 1 and 11 and through this dependency are not taught, anticipated or rendered obvious.

Claims 1-3, 6, 8-9, 11-12, 15-18 and 21-22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ohki et al. (U.S. 4,983,038). The Ohki et al. reference is non-analogous art. The Ohki et al. reference is related to measuring and testing in optics. Furthermore, the Ohki et al. reference does not teach anything about mixing of fluids. The Ohki et al. reference does not have a mixing section, and does not have a supply channel that feeds a fluid radially into a mixing chamber. The Ohki et al. reference teaches an apparatus for creating a "sheath-type" flow (col 1, ln 31-36), wherein a first fluid flows down a channel sheathed, or surrounded, by a second fluid. This provides for a minimal disturbance of the sheathed fluid because it is insulated from the shearing effects of the wall by the sheathing fluid as it passes through the analysis section where a light beam is passed through the fluid to a detector. The Ohki et al. reference is missing elements of the present invention, such as a mixing chamber and radial injection ports, and therefore does not anticipate the present invention. It is therefore submitted that claims 1-3, 6, 8-9, 11-12, 15-18 and 21-22 are not taught, anticipated or rendered obvious by the reference.

Claims 4, 7, 10, 13, 19 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ohki et al. (U.S. 4,983,038). As stated above, the Ohki et al. reference is non-analogous art, as it is in the field of optics, and is not pertinent as Ohki et al. teaches a sample holder and does not teach anything about the mixing of fluids. In

addition, a person of ordinary skill in the art would not look to an apparatus outside the field that is designed for maintaining fluid segregation, if that person was looking for rapid mixing of fluids. The Ohki et al. reference teaches away from mixing of fluids. Therefore, it is submitted that claims 4, 7, 10, 13, 19 and 23 are not taught, anticipated or rendered obvious by the reference.

Claims 1-10 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-28 of U.S. Patent No. 6,655,829. Applicants note that the cited reference, U. S. Patent No. 6,655,829, is commonly owned by the assignee of the present application and has at all times been so owned. Consequently, the rejection may be obviated by the submission of a Terminal Disclaimer which applicants have attached hereto.

Claims 11-23 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-28 of U.S. Patent No. 6,655,829 in view of Manz (U. S. Patent No. 5,250,263). Applicants note that the cited reference, U. S. Patent No. 6,655,829, is commonly owned by the assignee of the present application and has at all times been so owned. Consequently, the rejection may be obviated by the submission of a Terminal Disclaimer which applicants have attached hereto.

In summary, claims 1-4, 6-19 and 21-23 remain in the application. Claims 5 and 20 have been cancelled. Remarks have been made pointing out the differences between the present invention and the prior art references traversing all of the Examiner's rejections

and objections. Accordingly in view of the remarks, applicants assert that claims 1-4, 6-19 and 21-23 meet all statutory requirements and respectfully request allowance of all pending claims. If the examiner believes it would expedite prosecution of the above identified application he is cordially invited to contact applicants' attorney at the below listed telephone number.

Respectfully submitted,

Arthur E. Gooding
Attorney for Applicants
Reg. No. 50,513
(847) 391-1520 (phone)
(847) 391-2387 (fax)

AEG/mml